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too minute to supply any information respecting the form of the burials," or, what is much more important, the character of the skeletons themselves, from which the racial affinities of the people might perhaps be determined. Scarcely second in interest to the long-sought "Rosetta stone of the Mayas" would be a moderately large series of Maya skeletons in a fair state of preservation.

FRANK RUSSELL.

GENERAL BIOLOGY.

Variation in Seedlings. — Professor Herbert L. Jones[1] found in Cambridge, Mass., a sycamore maple, *Acer pseudoplanatus*, which produces seedlings showing a large number of abnormalities. The cotyledons show a tendency to be doubled, and all grades of doubling were found from a mere notch at the distal end of one cotyledon to four complete seed-leaves. Where one cotyledon is completely doubled, the plumule usually consists of a whorl of three leaves, but where there are four complete cotyledons there are never more than two leaves — a very curious correlation. R. P. B.

Chemical Analysis of the Plankton. — The chemical composition of the plankton of the Baltic Sea is discussed and compared with the analysis of certain agricultural products in a recent paper by Brandt.[2] The Copepoda, Peridinidæ, and diatoms are the predominant forms in the plankton of this body of water. Fifty cubic centimeters of plankton of mixed constitution weigh, when dried, from 1.08 to 1.74 grams; when diatoms predominate, the weight falls as low as .04 gram; and when Copepoda are abundant, it may rise as high as 2.1 grams. The results of the enumerations made of the organisms in the different catches subjected to analysis are utilized in the computation of their number in a gram of the dried plankton. It has thus been determined that it takes 675,000,000 diatoms (principally Chætoceros) or 42,000,000 to 65,000,000 Peridinidæ to weigh one gram; in the case of the marine Copepoda, from 300,000 to 500,000 are required; while the single analysis of a fresh-water plankton composed mainly of the larger individuals indicates that 50,000 to 124,000 are sufficient. It is further estimated that on the basis of total dry weight 1 copepod = 135 Peridinidæ = 1687 diatoms; when, however, only the ash-free matter is made the basis of comparison, 1 copepod = 127 Peridinidæ = 4407 diatoms. As the result of the analysis of 15 different catches, the chemical composition of the Copepoda, Peridinidæ, and of the diatoms was ascertained to be as follows, the amounts of the constituent substances being expressed in parts per hundred of the total dry weight.

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[1] Jones, H. L. Unusual Forms of Maple Seedlings. Oberlin College, *Laboratory Bulletin* (1898), No. 9.

[2] Brandt, K. Beiträge zur Kenntniss der chemischen Zusammensetzung des Planktons. *Wissensch. Meeresuntersuchungen,* Neue Folge, Bd. iii (1898), Heft 2, pp. 45–90.

	ALBUMEN.	CHITIN.	FAT.	CARBOHYDRATES.	ASH.
Copepoda . . .	59.00	4.70	7.00	20.00	9.30
Peridinidæ . . .	13.00	—	1.40	80.60[1]	5.00
Diatoms[2] . . .	10.75	—	2.50	21.50	65.25[3]

The autumn and winter planktons of the Baltic are quite similar in their chemical composition, which is about midway between that of "rich pasturage" and green lupines, as shown in the following table.

PER CENT DRY WEIGHT.	ALBUMEN.	FAT.	CARBOHYDRATES.	ASH.
Rich pasturage . . .	20.6	4.5	64.6	10.1
Autumn plankton . .	20.2–21.8	2.1–3.2	60.–68.9	8.5–15.7
Green lupines	20.6	2.6	72.	4.6

An October plankton, rich in Peridinidæ, principally Ceratium, differs materially from all land products used as fodder, in the small content of fat and the relatively large amount of carbohydrates (cellulose principally). Its nearest chemical counterparts among the products of the soil are to be found in rye straw and meadow hay.

PER CENT DRY WEIGHT.	ALBUMEN.	FAT.	N-FREE EXTRACT.	CELLULOSE.	ASH.
Rye straw . . .	3.5	1.5	38.8	51.3	4.7
Ceratium plankton	13.0	1.3	39.0	41.5	5.2
Meadow hay . .	13.6	3.2	48.2	26.8	8.2

[1] About 50 per cent of this is cellulose.

[2] Principally Chætoceros.

[3] About 50 per cent of this is SiO_2.

The spring plankton is characterized by the predominance of diatoms and a great increase in the amount of ash, which precludes any direct comparison with land plants. If, however, the comparison be based upon the ash-free substance of the diatoms, it is found that this differs from the richer food plants only in the greater proportion of fat, as the following table shows.

PER CENT DRY WEIGHT.	ALBUMEN.	FAT.	CARBO-HYDRATES.
Lupine — extra quality	29.3	2.8	67.8
Peas (kernels)	27.2	2.3	70.4
Diatoms	28.7	8.0	63.2

The summer plankton is predominantly animal, and thus presents a large amount of albumen, a fat-content at times low, at times abnormally high, and a relatively very small amount of carbohydrates. In these particulars its analysis resembles those of fish, mussels, and other marine animals.

C. A. K.

ZOOLOGY.

Morphology of Trematodes. — An interesting contribution to trematode morphology is contained in the recent paper by Pratt in the *Zoologische Jahrbücher*.[1] An investigation of *Apoblema appendiculatum* has brought to light a condition of the body covering which throws light upon the unsettled question concerning the nature of the outer layer of the body, or "cuticula," in trematodes and cestodes. Five principal views have been advanced concerning the nature of this layer. The older view of Schneider ('73) and Minot ('77) was that the layer is a basement membrane from which the overlying epithelium has been lost. Ziegler ('83) made the suggestion that the cuticula is to be regarded as an epithelium in which the nuclei, cell boundaries, etc., have become obliterated, a view which has attained considerable acceptance from the support given it in recent years by the writings of Braun and Monticelli. Brandes ('92) advanced the view that the layer arises as a secretion of the submuscular cells

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[1] Pratt, H. S. A Contribution to the Life-History and Anatomy of the Appendiculate Distomes, *Zoologische Jahrbücher*, Abth. f. Anat., Bd. xi (1898).